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Plane Surfaces.

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PROVISIONAL SPECIFICATION.

Improvements in Levigating or Grinding Machinery.

I, ARTHUR MAW of Benthall Works, Jackfield in the County of Salop, Manufacturer, do hereby declare the nature of this invention to be as follows :—

This invention relates to improvements in machinery for levigating or grinding in a wet state flints, Cornish-stone, glazes, enamels, and such other materials of a like nature as are usually ground or pulverized in that manner.

In the ordinary form of levigating pan, the effect of the wear between the faces of the mullers and the bedstone, has a tendency to hollow out the bedstone into the form of a basin while the face of the muller assumes a convex form corresponding with it thereby necessitating the frequent dressing or channelling of the mullers so that the material can be admitted under them.

In consequence of the peculiar shape occasioned by the wear of the ordinary bedstones and the mullers it is a matter of difficulty and expense to fit new mullers to existing bedstones, inasmuch as the latter require to be dressed flat on the occasion of each renewal.

My invention has for its object to increase the efficiency of the action of the muller and the bedstone, and my invention effects the saving of the labor required for the grooving and dressing of the mullers through the peculiar operation of the wear on the faces of the mullers and bedstone by which the wear of mullers and bedstone is spread as nearly as may be evenly over the whole of their respective faces but in such a manner that they are never at any part of their respective revolutions absolutely applied to one another over the whole of their respective faces at the same time, but although the whole faces both of mullers and bedstone come into operation at each revolution they do so in such a manner as to admit the material under the faces of the mullers, without the labor and loss of grinding surface involved by the usual grooving or channelling of the mullers.

In carrying out my invention I employ two or more mullers or sets of mullers working on the same bed. These mullers are preferably driven in opposite directions by two or more vertical shafts which may be rotated on their axis in any convenient manner. I also make the bedstone upon which the mullers work revolve in a manner similar to the bed of edge runners.

The vertical shaft carrying each of the mullers may be driven by bevel gearing from a horizontal shaft above. The rotation of the bedstone may also be effected from off the same horizontal driving shaft. For this purpose the bedstone is fixed on a table having at its outer edge a toothed wheel gearing with a pinion on a vertical shaft which receives rotation by bevel gearing from the horizontal shaft ; or by bevel gearing from beneath.

In machines of large size instead of employing two mullers each revolved by a vertical shaft I can employ several mullers propelled by two or more arms attached to each vertical shaft.

Dated this 5th day of July 1894.

J. C. MEWBURN & ELLIS,
55 & 56, Chancery Lane, London, Patent Agents.

[*Price 8d.*]

COMPLETE SPECIFICATION.

Improvements in Levigating or Grinding Machinery.

I, ARTHUR MAW of Benthall Works, Jackfield in the County of Salop, Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in machinery for levigating or grinding in a wet state glazes, enamels, and such other materials of a like nature as are usually ground or pulverized in that manner.

In the ordinary form of levigating pan, the effect of the wear between the faces of the mullers and the bedstone has a tendency to hollow out the bedstone into the form of a basin while the face of the muller assumes a convex form corresponding with it, thereby necessitating the frequent dressing and channelling of the mullers so that the material can be admitted under them.

In consequence of the peculiar shape occasioned by the wear of the ordinary bedstones and the mullers it is a matter of difficulty and expense to fit new mullers to existing bedstones, inasmuch as the latter require to be dressed flat on the occasion of each renewal.

My invention has for its object to increase the efficiency of the action of the muller, and the bedstone, and my invention effects the saving of the labor required for the grooving and dressing of the mullers through the peculiar operation of the wear on the faces of the mullers and bedstone by which the wear of the mullers and bedstone is spread as nearly as may be evenly over the whole of their respective faces but in such a manner that they are never at any part of their respective revolutions absolutely applied to one another over the whole of their respective faces at the same time, but although the whole faces both of mullers and bedstone come into operation at each revolution they do so in such a manner as to admit the material under the faces of the mullers, without the labor and loss of grinding surface involved by the usual grooving or channelling of the mullers.

In carrying out my invention I employ two or more mullers or sets of mullers working on the same bed. These mullers are driven preferably in opposite directions by two or more vertical shafts which may be rotated on their axes in any convenient manner. I also make the bedstone upon which the mullers work revolve in a manner similar to the bed of edge runners.

Each of the vertical shafts carrying the mullers may be driven by bevel gearing from a horizontal shaft above. The rotation of the bedstone may also be effected from off the same horizontal driving shaft.

For this purpose the bedstone is fixed on a table having at its outer edge a toothed wheel gearing with a pinion on a vertical shaft which receives rotation by bevel gearing from the horizontal shaft or the vertical shaft may be driven by bevel gearing from beneath.

The accompanying drawings represent a machine constructed according to my invention. Figure 1 is a side elevation partly in section, and Figure 2 a plan on the line 2—2 of Figure 1.

A is the bedstone resting on an iron bed plate supported by a vertical spindle B. On the outer edge of the bed plate is a toothed wheel C gearing with and driven by a pinion D on a vertical shaft E which derives its motion from the driving shaft F through the intermediation of the bevel pinions G G. H is the tub for containing the material to be ground or levigated; it is carried by and revolves with the bed plate. I I are two mullers working on the bedstone A. They are carried by vertical shafts K K driven in opposite directions from the shaft F

through the intermediation of the bevel pinions L L; the two mullers just clear one another in their revolutions.

The movement of the various parts causes the grinding surfaces to describe epicycloidal or scroll curves which never return exactly upon themselves; consequently the bed remains approximately level but the very slight irregularity of surface produced by wear both in the bedstone and mullers operates in such a manner as to leave at every period of their revolutions a sufficient interstice for the admission of the material that is being ground without the loss of grinding surface involved by grooving and channelling; and inasmuch as at every revolution the part of the mullers which at one time provides the openings, at the next receives the greatest pressure and *vice versâ*, there is a constant crushing as well as grinding action and it has been found in practice that the smoother the grinding faces are worn the more efficient is the operation of the machine.

In machines of large size instead of employing two mullers each revolved by a vertical shaft I can employ several mullers carried by two, or more arms attached to each vertical shaft.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a levigating or grinding machine, the combination of a revolving bedstone and two or more mullers made to revolve above the bedstone on vertical axes substantially as hereinbefore described.

2. Constructing levigating or grinding machinery substantially as hereinbefore described and represented in the accompanying drawings.

Dated this 5th day of April 1895.

J. C. MEWBURN & ELLIS,
55 & 56, Chancery Lane, London, Chartered Patent Agents.

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